WHAT IS CLAIMED IS:

1. A mobile communication system having a plurality of mobile stations and a base station which includes a plurality of antennas, a frequency shift portion, a combining portion, a receiving portion and a signal processing portion, wherein:

the antenna receives radio waves transmitted by the mobile stations,

the frequency shift portion shifts the received signal with a frequency corresponding to each of the antennas,

the combining portion determines the signal, which is shifted in frequency, as a combining signal,

the receiving portion converts the combining signal in frequency to make an intermediate frequency signal ,and converts the intermediate frequency signal into a digital signal, and

the signal processing portion comprises;

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component corresponding to each of the antennas and which makes a demodulation signal at every antenna,

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations, and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations,

whereby the system being reduced in size and cost.

2. A mobile communication system claimed in claim 1, wherein:

the system utilizes a code division multiple access.

3. A mobile communication system claimed in claim 1, wherein:

the frequency shift portion includes a plurality of amplifiers corresponding to the antennas, a plurality of mixers, and a plurality of oscillators,

the amplifier amplifies a signal received at every antenna,

the oscillator oscillates a frequency predetermined on the basis of a value corresponding to each of the antennas, and

the mixer frequency-shifts the amplified signal with the oscillating signal.

4. A mobile communication system claimed in claim 1, wherein:

the frequency shift portion includes a plurality of amplifiers corresponding to the antennas, a plurality of mixers, a plurality of frequency multipliers, and a single reference oscillators,

the amplifier amplifies a signal received at every antenna,

the reference oscillator oscillates a single predetermined frequency,

the frequency multiplier multiplies a reference oscillating signal with a predetermined value based upon a value corresponding to each of the antennas, and

the mixer frequency-shifts the amplified signal with a multiplied signal.

5. A mobile communication system claimed in claim 1, wherein:

a phase difference is retained between the received signal and the demodulation signal.

6. A mobile communication system having a plurality of mobile stations and a base station which includes an adaptive array antenna having a plurality of antennas, a frequency shift portion, a combining portion, a single receiving portion, and a signal processing portion, wherein:

the adaptive array antenna receives radio waves transmitted by the mobile stations,

the frequency shift portion shifts the received signal with a frequency predetermined on the basis of a value corresponding to each of the antennas,

the combining portion determines the signal, which is shifted in frequency, as a single combining signal,

the single receiving portion converts the single combining signal in frequency to make an intermediate frequency signal ,and converts the intermediate frequency signal into a digital signal, and

the signal processing portion comprises;

spreading demodulation means which demodulates the digital signal with spreading by the use of a spreading code that is compensated frequency shift component predetermined on the basis of a value corresponding to each of the antennas and which makes a demodulation signal at every antenna,

judging means which specifies an arrival direction of each of the radio waves of the mobile stations on the basis of the demodulation signal and which produces the demodulation signal for each of the mobile stations, and

fading compensation means which performs a RAKE combination from the demodulation signal for each of the mobile stations,

whereby the system being reduced in size and cost.

7. A mobile communication system claimed in claim 6, wherein:

the system utilizes a code division multiple access.

8. A mobile communication system claimed in claim 6, wherein:

the frequency shift portion includes a plurality of amplifiers corresponding to the antennas, a plurality of mixers, and a plurality of oscillators,

the amplifier amplifies a signal received at every antenna,

the oscillator oscillates a frequency predetermined on the basis of a value corresponding to each of the antennas, and

the mixer frequency-shifts the amplified signal with the oscillating signal.

9. A mobile communication system claimed in claim 6, wherein:

the frequency shift portion includes a plurality of amplifiers corresponding to the antennas, a plurality of mixers, a plurality of frequency multipliers, and a single reference oscillators,

the amplifier amplifies a signal received at every antenna,

the reference oscillator oscillates a single predetermined frequency,

the frequency multiplier multiplies a reference oscillating signal with a predetermined value based upon a value corresponding to each of the antennas, and

the mixer frequency-shifts the amplified signal with a multiplied signal.

10. Mobile communication system claimed in claim 6, wherein:

a phase difference is retained between the received signal and the demodulation signal.